IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Letts et al**

Application No: **09/516,194** Group Art Unit: **1626**

Filed: **March 1, 2000** Examiner: **L. Stockton**

For: **Nitrosated and Nitrosylated Prostaglandins, Compositions and Methods of Use**

Attorney Docket No: **102258.285**

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313

Petition from Restriction Requirement under 37 CFR § 1.144

Applicants Petition under 37 C.F.R. § 1.144 the Examiner's withdrawal from consideration of claims 4-8, 10-17, 19-31, 33-40 and 104-105 in the Office Action dated January 13, 2005.

I. The Restriction Requirement

In an Office Action dated May 8, 2001, the Examiner made a restriction requirement to claims 1-115 and requested Applicant to elect a single disclosed species. In particular, the Examiner restricted the invention as follows:

Group I	Claims 1-9	Compounds of Formula I
Group II	Claims 10-115	Compositions Comprising Compounds of Formula I

On June 8, 2001, Applicants traversed the restriction requirement and provisionally elected Group II drawn to compositions comprising a compound of Formula I and a vasoactive agent. Applicants traversed the election of species requirement and provisionally elected nitrosated prostaglandins (i.e., prostaglandins containing at least one $-NO_2$ group) as the species for the compound of Formula I; and phentolamine as the species for the vasoactive agent.

In the Office Action dated July 24, 2001, the Examiner maintained the restriction requirement and objected to claims 2-8, 10-17, 19-31, 33-40 and 104-106 as being directed to a misjoinder of inventions. The Examiner indicated that the claims were examined to the extent

they read on the elected species of the nitrosated prostaglandins (i.e., prostaglandins containing at least one -NO_2 group). *See* Office Action dated July 24, 2001, at Paragraph No. 1. The Examiner further indicated that the claims limited to the elected invention would be allowed. *See* Office Action dated July 24, 2001, at Paragraph No. 3. The Examiner did not make any rejections under 35 USC § 102 or § 103 against the elected species.

On October 24, 2001, Applicants requested examination of the other species that fell within the scope of the compound of Formula I pursuant to MPEP § 803.02.

In the final Office Action dated January 22, 2002, the Examiner allowed claims 2-8, 10-17, 19-31, 33-40 and 104-106 to the extent that they read on the elected species, i.e., the nitrosated prostaglandins (i.e., prostaglandins that contain at least one -NO_2 group). *See* Office Action dated January 22, 2002, at Paragraph No. 1. The Examiner objected to the claims as being directed to a misjoinder of inventions of nitro (nitrosated prostaglandins, i.e., prostaglandins that contain at least one -NO_2 group) and nitroso (nitrosylated prostaglandins, i.e., prostaglandins that contain at least one -NO group)). *See* Office Action dated January 22, 2002, at Paragraph No. 2.

Applicants then filed a Petition dated April 18, 2002, requesting reconsideration and reversal of the Examiner's decision. On October 18, 2002, Applicant's Petition was **granted in full** and the application was forwarded to the Examiner for consideration to the Applicant's response filed July 22, 2002.

In the Communication from the Patent Office dated February 21, 2003, the finality of the Office Action dated January 22, 2002 was withdrawn.

On August 16, 2004, the Patent Office issued a 44-way restriction requirement. Applicants traversed the requirement and provisionally elected Examiner's Group II, claims 2, 3 and 116 drawn to the compounds of Formula I, with traverse. Applicant elected a nitrated prostaglandin of Formula A as the species.

In the Office Action dated January 13, 2005, the Examiner made the restriction requirement final.

A copy of the pending claims as amended in the Office Action response filed herewith is attached hereto as Appendix 1.

This Petition is timely filed: Applicants requested reconsideration under 37 CFR § 1.143 and made a provisional election with traverse. The Examiner then made the restriction requirement final.

II. The Restriction Requirement is Improper.

Applicants respectfully submit that the Restriction Requirement is improper. The Patent Office has issued numerous office actions over the past 4+ years of prosecution in which all the pending claims were examined together. For the Examiner's convenience a listing of the Office Actions issued to date is given below:

1. Restriction Requirement dated May 8, 2001
2. Office Action dated July 24, 2001
3. Final Office Action dated January 22, 2002
4. Petition Decision dated October 18, 2002, granting Applicant's petition
5. Withdrawal of finality of January 22, 2002, Office Action dated February 21, 2003.
6. Office Communication dated August 29, 2003
7. Office Action dated November 25, 2003
8. Office Communication dated May 19, 2004
9. Restriction requirement dated August 16, 2004
10. Office Action dated January 13, 2005

In the final Office Action dated January 22, 2002, the Examiner allowed claims 2-8, 10-17, 19-31, 33-40 and 104-106 to the extent that they read on the elected species, i.e., the nitrosated prostaglandins (i.e., prostaglandins that contain at least one -NO_2 group). *See* Office Action dated January 22, 2002, at Paragraph No. 1. The Examiner objected to the claims as being directed to a misjoinder of inventions of nitro (nitrosated prostaglandins, i.e., prostaglandins that contain at least one -NO_2 group) and nitroso (nitrosylated prostaglandins, i.e., prostaglandins that contain at least one -NO group)). *See* Office Action dated January 22, 2002, at Paragraph No. 2.

Applicants then filed a Petition dated April 18, 2002, requesting reconsideration and reversal of the Examiner's decision. On October 18, 2002, Applicant's Petition was **granted in full** and the application was forwarded to the Examiner for consideration to the Applicant's response filed July 22, 2002.

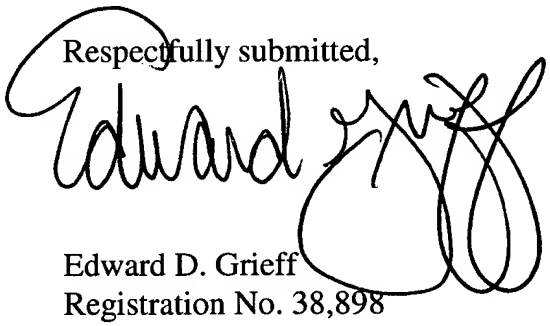
The Patent Office by issuing **another restriction requirement** on August 16, 2004 completely ignored the Petition Decision of October 18, 2002, that was **granted in full**. The pending claims 2-8, 10-17, 19-31, 33-40, 104 -106 and 116 (essentially the same as cancelled claim 1) are essentially the **same claims** that were pending at the time Applicant's Petition was **granted in full,**

The Examiner's refusal to examiner all the claims together after 4+ years of prosecution and the **granting of Applicant's petition in full** for essentially the **same claims** is improper.

III. Conclusion

Applicants respectfully request that the restriction requirement be withdrawn and that all the pending claims be examiner together.

Respectfully submitted,



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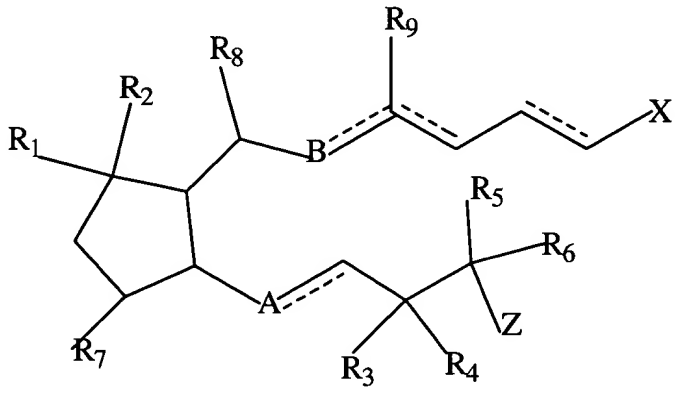
Pending Claims as of April 2005

2. A compound of formula (I) or a pharmaceutically acceptable salt thereof, wherein the compound of formula (I) is:



(I)

wherein the dotted lines indicate a single or a double bond;

R_1 is $-OD_1$ or –Cl;

R_2 and R_8 are a hydrogen; or R_1 and R_2 taken together are $=CH_2$ or =O;

R_3 and R_4 are each independently a hydrogen, $-OD_1$ or $-CH_3$;

R_5 and R_6 are each independently a hydrogen, $-OD_1$, $-CH_3$, $-OCH_3$ or $-CH=CH_2$;

R_7 is a hydrogen or $-OD_1$;

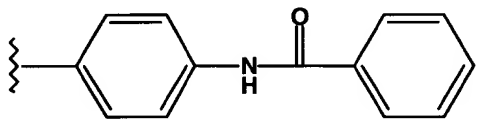
R_9 is hydrogen or absent when the carbon to which it is attached is the central carbon of an allene functionality; or R_8 and R_9 taken together with the chain to which they are attached form a substituted benzene ring with the proviso that R_1 is an oxygen atom which is attached to the carbon atom at the position of the benzene ring defined by B;

A is –CH=, $-CH_2$, -S-, or -O-;

B is –CH=, $-CH_2$, -S-, or –C(O)-;

X is $-CH_2OR_{11}$, $-C(O)OR_{11}$ or $-C(O)N(D_1)R_{12}$;

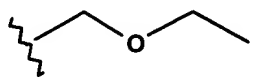
R_{11} is D_1, a lower alkyl group, or



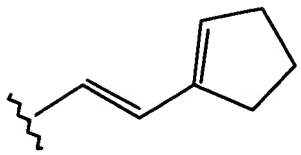
R_{12} is $-S(O)_2CH_3$ or $-C(O)CH_3$;

Z is (a) an ethyl, (b) a butyl, (c) a hexyl, (d) a benzyl,

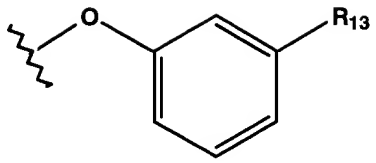
(e)



(f)

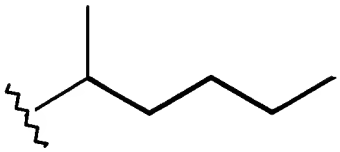


(g)



(h)

or



R_{13} is a hydrogen or –Cl;

D_1 is a hydrogen or D; with the proviso that at least one D_1 in formula (I) must be D;

D is Q or K;

Q is -NO or $-NO_2$;

K is $-W_a-E_b-(C(R_e)(R_f))_p-E_c-(C(R_e)(R_f))_x-W_d-(C(R_e)(R_f))_y-W_i-E_j-W_g-(C(R_e)(R_f))_z-T-Q$; with the proviso that when X is $-C(O)OD_1$ and D_1 is K, then K is not an alkyl, branched alkyl or cycloalkyl mononitrate; a benzoic acid substituted benzyloxy mononitrate; the regioisomeric esters of glycerol dinitrate and oligomers thereof;

a, b, c, d, g, i and j are each independently an integer from 0 to 3;

p, x, y and z are each independently an integer from 0 to 10;

W at each occurrence is independently -C(O)-, -C(S)-, -T-, $-(C(R_e)(R_f))_h-$, an alkyl group, an aryl group, a heterocyclic ring, an arylheterocyclic ring, or $-(CH_2CH_2O)_q-$;

E at each occurrence is independently -T-, an alkyl group, an aryl group, $-(C(R_e)(R_f))_h-$, a heterocyclic ring, an arylheterocyclic ring, or $-(CH_2CH_2O)_q-$;

h is an integer form 1 to 10;

q is an integer from 1 to 5;

R_e and R_f are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, a

cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cycloalkylthio, a cycloalkenyl, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, a carbamate, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, a sulfonic ester, a urea, a phosphoryl, a nitro, -T-Q , or $-(C(R_o)(R_p))_k$-T-Q, or R_e and R_f taken together with the carbons to which they are attached form a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group or a bridged cycloalkyl group;

R_o and R_p are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cycloalkylthio, a cycloalkenyl, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, a carbamate, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, a sulfonic ester, a urea, a phosphoryl, a nitro, -T-Q , or R_o and R_p taken together with the carbons to which they are attached form a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group or a bridged cycloalkyl group;

k is an integer from 1 to 3;

T at each occurrence is independently a covalent bond, a carbonyl, an oxygen, $-S(O)_o-$ or $-N(R_a)R_i-$;

o is an integer from 0 to 2;

R_a is a lone pair of electrons, a hydrogen or an alkyl group;

R_i is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylaryl, an alkylsulfinyl, an alkylsulfonyl, an arylsulfinyl, an arylsulfonyl, a sulfonamido, a carboxamido, a carboxylic ester, an amino alkyl, an amino aryl, $-CH_2-C(T-Q)(R_e)(R_f)$, or $-(N_2O_2-)^-\bullet M^+$, wherein M^+ is an organic or inorganic cation; with the proviso that when R_i is $-CH_2-C(T-Q)(R_e)(R_f)$ or $-(N_2O_2)^-\bullet M^+$, or R_e or R_f are T-Q or $(C(R_o)(R_p))_k$-T-Q, then the "-T- Q" subgroup can be a hydrogen, an alkyl, an alkoxy, an alkoxyalkyl, an aminoalkyl, a hydroxy, a heterocyclic ring or an aryl group;

with the proviso that the compound of formula (I) has at least one NO group or at least one NO_2 group linked through an oxygen atom, a nitrogen atom or a sulfur atom.

3. The compound of claim 2, wherein the compound of formula (I) is a nitrosated arbaprostil, a nitrosylated arbaprostil, a nitrosated and nitrosylated arbaprostil, a nitrosated alprostadil, a nitrosylated alprostadil, a nitrosated and nitrosylated alprostadil, a nitrosated beraprost, a nitrosylated beraprost, a nitrosated and nitrosylated beraprost, a nitrosated carboprost, a nitrosylated carboprost, a nitrosated and nitrosylated carboprost, a nitrosated cloprostenol, a nitrosylated cloprostenol, a nitrosated and nitrosylated cloprostenol, a nitrosated dimoxaprost, a nitrosylated dimoxaprost, a nitrosated and nitrosylated dimoxaprost, a nitrosated enprostil, a nitrosylated enprostil, a nitrosated and nitrosylated enprostil, a nitrosated enisoprost, a nitrosylated enisoprost, a nitrosated and nitrosylated enisoprost, a nitrosated fluprostenol, a nitrosylated fluprostenol, a nitrosated and nitrosylated fluprostenol, a nitrosated fenprostalene, a nitrosylated fenprostalene, a nitrosated and nitrosylated fenprostalene, a nitrosated gemeprost, a nitrosylated gemeprost, a nitrosated and nitrosylated gemeprost, a nitrosated latanaprost, a nitrosylated latanaprost, a nitrosated and nitrosylated latanaprost, a nitrosated limaprost, a nitrosylated limaprost, a nitrosated and nitrosylated limaprost, a nitrosated meteneprost, a nitrosylated meteneprost, a nitrosated and nitrosylated meteneprost, a nitrosated mexiprostil, a nitrosylated mexiprostil, a nitrosated and nitrosylated mexiprostil, a nitrosated misoprostol, a nitrosylated misoprostol, a nitrosated and nitrosylated misoprostol, a nitrosated misoprost, a nitrosylated misoprost, a nitrosated and nitrosylated misoprost, a nitrosated misoprostol acid, a nitrosylated misoprostol acid, a nitrosated and nitrosylated misoprostol acid, a nitrosated nocloprost, a nitrosylated nocloprost, a nitrosated and nitrosylated nocloprost, a nitrosated

ornoprostil, a nitrosylated ornoprostil, a nitrosated and nitrosylated ornoprostil, a nitrosated prostalene, a nitrosylated prostalene, a nitrosated and nitrosylated prostalene, a nitrosated PGE_1, a nitrosylated PGE_1, a nitrosated and nitrosylated PGE_1, a nitrosated PGE_2, a nitrosylated PGE_2, a nitrosated and nitrosylated PGE_2, a nitrosated PGF_1, a nitrosylated PGF_1, a nitrosated and nitrosylated PGF_1, a nitrosated $PGF_{2\alpha}$, a nitrosylated $PGF_{2\alpha}$, a nitrosated and nitrosylated $PGF_{2\alpha}$, a nitrosated rioprostil, a nitrosylated rioprostil, a nitrosated and nitrosylated rioprostil, a nitrosated rosaprostol, a nitrosylated rosaprostol, a nitrosated and nitrosylated rosaprostol, a nitrosated remiprostol, a nitrosylated remiprostol, a nitrosated and nitrosylated remiprostol, a nitrosated sulprostone, a nitrosylated sulprostone, a nitrosated and nitrosylated sulprostone, a nitrosated trimoprostil, a nitrosylated trimoprostil, a nitrosated and nitrosylated trimoprostil, a nitrosated tiprostanide, a nitrosylated tiprostanide, a nitrosated and nitrosylated tiprostanide, a nitrosated unoprostone, a nitrosylated unoprostone, a nitrosated and nitrosylated unoprostone, a nitrosated viprostol, a nitrosylated viprostol, a nitrosated and nitrosylated viprostol or a mixture thereof.

4. A composition comprising the compound of claim 2 and a pharmaceutically acceptable carrier.

5. A method for treating a sexual dysfunction in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 4.

6. The method of claim 5, wherein the patient is female.

7. The method of claim 5, wherein the patient is male.

8. The method of claim 5, wherein the composition is administered orally, by intracavernosal injection, by transurethral application, or by transdermal application.

10. The composition of claim 4, further comprising at least one vasoactive agent or a pharmaceutically acceptable salt thereof.

11. The composition of claim 10, wherein the vasoactive agent is a potassium channel activator, a calcium channel blocker, an α-blocker, a β-blocker, a phosphodiesterase inhibitor, adenosine, an ergot alkaloid, a vasoactive intestinal peptide, a dopamine agonist, an opioid antagonist, an endothelin antagonist or a mixture thereof.

12. The composition of claim 10, wherein the vasoactive agent is an α-blocker or a phosphodiesterase inhibitor.

13. The composition of claim 12, wherein the α-blocker is phentolamine, prazosin, doxazosin, terazosin, yohimbine or moxisylyte and the phosphodiesterase inhibitor is papaverine, zaprinast, sildenafil or IC 351, or a mixture thereof.

14. A method for treating a sexual dysfunction in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 10.

15. The method of claim 14, wherein the patient is female.

16. The method of claim 14, wherein the patient is male.

17. The method of claim 14, wherein the composition is administered orally, by intracavernosal injection, by transurethral application or by transdermal application.

19. A composition comprising at least one compound of claim 2 or a pharmaceutically acceptable salt thereof, and at least one compound that donates, transfers or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase.

20. The composition of claim 19, further comprising a pharmaceutically acceptable carrier.

21. The composition of claim 19, wherein the compound that donates, transfers, or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor or is a substrate for nitric oxide synthase is an S-nitrosothiol.

22. The composition of claim 21, wherein the S-nitrosothiol is S-nitroso-N-acetylcysteine, S-nitroso-captopril, S-nitroso-N-acetylpenicillamine, S-nitroso-homocysteine, S-nitroso-cysteine or S-nitroso-glutathione.

23. The composition of claim 21, wherein the S-nitrosothiol is:

(i) $HS(C(R_e)(R_f))_mSNO$;

(ii) $ONS(C(R_e)(R_f))_mR_e$; and

(iii) $H_2N\text{-}CH(CO_2H)\text{-}(CH_2)_m\text{-}C(O)NH\text{-}CH(CH_2SNO)\text{-}C(O)NH\text{-}CH_2\text{-}CO_2H$;

wherein m is an integer from 2 to 20; R_e and R_f are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an

arylalkoxy, an alkylthio, an arylthio, a cycloalkylthio, a cycloalkenyl, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, a carbamate, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, a sulfonic ester, a urea, a phosphoryl, a nitro, -T-Q , or $-(C(R_o)(R_p))_k$-T-Q, or R_e and R_f taken together with the carbons to which they are attached form a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group or a bridged cycloalkyl group; R_o and R_p are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cycloalkylthio, a cycloalkenyl, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, a carbamate, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, a sulfonic ester, a urea, a phosphoryl, a nitro, -T-Q , or R_o and R_p taken together with the carbons to which they are attached form a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group or a bridged cycloalkyl group; Q is -NO or $-NO_2$; and T is independently a covalent bond, a carbonyl, an oxygen, $-S(O)_o$- or $-N(R_a)R_i$-, wherein o is an integer from 0 to 2, R_a is a lone pair of electrons, a hydrogen or an alkyl group; R_i is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an aryl carboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylaryl, an alkylsulfinyl, an alkylsulfonyl, an arylsulfinyl, an arylsulfonyl, a sulfonamido, a carboxamido, a carboxylic ester, an amino alkyl, an amino aryl, $-CH_2-C(T-Q)(R_e)(R_f)$, or $-(N_2O_2-)^-\bullet M^+$, wherein M^+ is an organic or inorganic cation; with the proviso that when R_i is $-CH_2-C(T-Q)(R_e)(R_f)$ or $-(N_2O_2-)\bullet M^+$; then "-T-Q" can be a hydrogen, an alkyl group, an alkoxyalkyl group, an aminoalkyl group, a hydroxy group or an aryl group.

24. The composition of claim 19, wherein the compound that donates, transfers, or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase, is L-arginine, L-homoarginine, N-hydroxy-L-arginine, nitrosated L-arginine, nitrosylated L-arginine, nitrosated N-hydroxy-L-arginine, nitrosylated N-hydroxy-L-arginine, citrulline, ornithine, glutamine, lysine, polypeptides comprising at least one of these amino acids or inhibitors of the enzyme arginase.

25. The composition of claim 19, wherein the compound that donates, transfers, or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase is:

(i) a compound that comprises at least one ON-O-, ON-N- or ON-C- group;

(ii) a compound that comprises at least one O_2N-O-, O_2N-N-, O_2N-S- or -O_2N-C- group;

(iii) a N-oxo-N-nitrosoamine having the formula: R^1R^2-N-N(O-M^+)-NO, wherein R^1 and R^2 are each independently a polypeptide, an amino acid, a sugar, an oligonucleotide, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted hydrocarbon, or a heterocyclic group, and M^+ is an organic or inorganic cation.

26. The composition of claim 25, wherein the compound comprising at least one ON-O-, ON-N- or ON-C- group is an ON-O-polypeptide, an ON-N-polypeptide, an ON-C-polypeptide, an ON-O-amino acid, an ON-N-amino acid, an ON-C-amino acid, an ON-O-sugar, an ON-N-sugar, an ON-C-sugar, an ON-O-oligonucleotide, an ON-N-oligonucleotide, an ON-C-oligonucleotide, a straight or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic ON-O-hydrocarbon, a straight or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic ON-N-hydrocarbon, a straight or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic ON-C-hydrocarbon, an ON-O-heterocyclic compound, an ON-N-heterocyclic compound or a ON-C-heterocyclic compound.

27. The composition of claim 25, wherein compound comprising at least one O_2N-O-, O_2N-N-, O_2N-S- or O_2N-C- group is an O_2N-O-polypeptide, an O_2N-N-polypeptide, an O_2N-S-polypeptide, an O_2N-C-polypeptide, an O_2N-O-amino acid, O_2N-N-amino acid, O_2N-S-amino acid, an O_2N-C-amino acid, an O_2N-O-sugar, an O_2N-N-sugar, O_2N-S-sugar, an O_2N-C-sugar, an

O_2N-O-oligonucleotide, an O_2N-N-oligonucleotide, an O_2N-S-oligonucleotide, an O_2N-C-oligonucleotide, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted O_2N-O-hydrocarbon, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted O_2N-N-hydrocarbon, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted O_2N-S-hydrocarbon, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted O_2N-C-hydrocarbon, an O_2N-O-heterocyclic compound, an O_2N-N-heterocyclic compound, an O_2N-S-heterocyclic compound or an O_2N-C-heterocyclic compound.

28. A method for treating a sexual dysfunction in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 19.

29. The method of claim 28, wherein the patient is female.

30. The method of claim 28, wherein the patient is male.

31. The method of claim 28, wherein the composition is administered orally, by intracavernosal injection, by transurethral application or by transdermal application.

33. The composition of claim 19, further comprising at least one vasoactive agent or a pharmaceutically acceptable salt thereof.

34. The composition of claim 33, wherein the vasoactive agent is a potassium channel activator, a calcium channel blocker, an α-blocker, a β-blocker, a phosphodiesterase inhibitor, adenosine, an ergot alkaloid, a vasoactive intestinal peptide, a dopamine agonist, an opioid antagonist, an endothelin antagonist or a mixture thereof.

35. The composition of claim 34, wherein the vasoactive agent is an α-blocker or a phosphodiesterase inhibitor.

36. The composition of claim 35, wherein the α-blocker is phentolamine, prazosin, doxazosin, terazosin, yohimbine or moxisylyte and the phosphodiesterase inhibitor is papaverine, zaprinast, sildenafil or IC 351, or a mixture thereof.

37. A method for treating a sexual dysfunction in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 33.

38. The method of claim 37, wherein the patient is female.

39. The method of claim 37, wherein the patient is male.

40. The method of claim 37, wherein the composition is administered orally, by intracavernosal injection, by transurethral application or by transdermal application.

104. A kit comprising at least one compound of claim 2 and at least one compound that donates, transfers or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase.

105. The kit of claim 104, wherein the compound of claim 2 and the at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase are separate components in the kit or are in the form of a composition in the kit.

106. The kit of claim 104, further comprising at least one vasoactive agent.

116. Arbaprostil, alprostadil, beraprost, carboprost, cloprostenol, dimoxaprost, enprostil, enisoprost, fluprostenol, fenprostalene, gemeprost, latanaprost, limaprost, meteneprost, mexiprostil, misoprostol, misoprost, misoprostol acid, nocloprost, ornoprostil, prostalene, PGE_1, PGE_2, PGF_1, $PGF_{2\alpha}$, a rioprostil, a rosaprostol, a remiprostol, a sulprostone, a trimoprostil, a tiprostanide, an unoprostone, a viprostol, or a pharmaceutically acceptable salt thereof comprising at least one NO group; wherein the at least one NO group is linked to the arbaprostil, alprostadil, beraprost, carboprost, cloprostenol, dimoxaprost, enprostil, enisoprost, fluprostenol, fenprostalene, gemeprost, latanaprost, limaprost, meteneprost, mexiprostil, misoprostol, misoprost, misoprostol acid, nocloprost, ornoprostil, prostalene, PGE_1, PGE_2, PGF_1, $PGF_{2\alpha}$, rioprostil, rosaprostol, remiprostol, sulprostone, trimoprostil, tiprostanide, unoprostone, viprostol through an oxygen atom, a nitrogen atom or a sulfur atom.